

Diversity of wild plants in a low-maintenance Scottish suburban garden. Then and now – 1986 and 2011

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In 1986, prior to the publication of the *Wild Plants of Glasgow* (Dickson, 1991), a survey was undertaken of the native (or naturalised) higher plant diversity of a large suburban garden in the south side of Glasgow. The garden harboured over sixty wild plant species, including a few unusual species for the area. A follow up survey was undertaken 25 years later in 2011, to assess how the natural plant community had changed over the years. Plants were identified with the aid of Keble Martin (1969), Garrard & Streeter (1983), and Phillips (1980). Nomenclature has been updated to match Dickson *et al.* (2000).

The garden located on Newark Drive in Pollokshields (NS 57225 63075) is moderately large with a footprint of around 1200m². The layout comprises, to the front, a gravel driveway and a lawn with bordering beds with a few shrubs and mature trees (lime, norway maple, sycamore, horse chestnut, holly, common whitebeam, laburnum and wych elm) (see Fig.1). The side gardens have an old concrete drive, grass areas, gravel paths and small trees (ash, rowan, silver birch, locust tree) (see Fig.2) and the rear garden has more extensive grass areas, a concrete garage forecourt, some overgrown beds, a former vegetable garden and a few mature trees (lime, alder, wild cherry and apple) (see Fig.3). The garden was intensively cultivated in the 1960s with many formal beds of flowers, neat lawns, pollarded trees, vegetable patches as well as a large greenhouse and numerous exterior cold frames. From the early 1970s the cultivation regime reduced rapidly to a low maintenance level. Tree pruning ceased, the greenhouse was dismantled, and many beds and vegetable patches were converted to grass or simply became overgrown with weeds. Lawn mowing continued but bed weeding was minimal, limited to removal of large saplings with only shrubs and some hardy perennial garden flowers persisting. The front driveway was maintained with occasional weeding or application of weed killer but the concrete drive and forecourt and other paths gradually became overgrown with grass and weeds.

The initial survey in 1986 recorded 51 species of native (or naturalised) flowering plants, five fern species and one horsetail (Table 1). Grasses added another, often

hidden, component of higher plant diversity. Mowing and strimming often limited grass identification but during the early 1980s ten species of grass (and one rush) were identified within the garden (Table 2). The flowering plants included a variety of annual weeds (eg. thale cress, cleavers, groundsel) and several pernicious perennial “weeds” - the bane of gardeners - rosebay willowherb, ground-elder, field horsetail, large bindweed, japanese knotweed. The grassy areas had their own distinctive flora including creeping buttercup, daisy, self-heal, and thyme-leaved speedwell. A few shade tolerant woodland species such as lesser celandine, broad-leaved helleborine and bluebell were already present under mature trees.

Some species were clearly garden escapes (*ie.* welsh poppy, feverfew) and others, although indigenous to Scotland, are known to have been intentional introductions into the garden in the 1970s: shining crane's-bill from Lennoxton, barren strawberry from Roebank Reservoir, water avens from Dalry (Ayrshire), great mullein from Dumfries, eaper spurge from the derelict greenhouse of a neighbouring garden, and bluebell from Pollok Park. Others may have previously arrived with soil from greenhouse plants. This is probably the case (indirectly) for the eaper spurge mentioned above and for the greater burnet-saxifrage which appeared in the early 1980s in the area of the dismantled greenhouse. The eaper spurge was introduced in 1974 and persisted by self seeding around the garden for around 12 years. It is rare in the Glasgow area, being recorded from only four tetrads (Dickson *et al.* 2000). The greater burnet-saxifrage appeared as a seedling in 1981 and comprised four large plants by 1986. It is very rare in Scotland and this was the first record for the Glasgow area (Dickson *et al.* 2000).

Accidental introduction of some plants with commercial grass seed mix during conversion of some former flower beds into lawns was also a known arrival route into the garden for at least three unusual species - black nightshade (*Solanum nigrum*) in 1978), small-flowered catchfly (*Silene gallica*) in 1980, and field madder (*Sherardia arvensis*) in 1981- but none of these persisted into the following years.

Four species of fern were present in 1986. Male-fern and lady-fern were scattered throughout the garden. There were three broad buckler-fern plants – introduced from Pollok Park and on the garden walls a single hard shield-fern and a single maidenhair spleenwort.

The follow-up survey in 2011 revealed that the number of wild flower species established in the garden had increased to 60 and the number of fern species remained the same at five. Some flower species (*e.g.* barren strawberry, germander speedwell, self-heal, bluebell) have spread and increased in abundance, others have decreased (*e.g.* red campion, american willowherb, daisy, feverfew). Altogether nine flower species and two ferns have disappeared and 18 new flower species and two new ferns have arrived. Mowing and strimming prevented a proper review of the grass species in 2011.

In addition to the flowering plants and ferns found in 2011, a large number of tree (or shrub) seedlings or saplings were noted sprouting on lawns and old border beds (Table 3). In spring 2011 nearly thirty lime seedlings (cotyledon stage) were observed on the lawn areas. Regeneration of lime is relatively unusual in Scotland (see Gray, Grist, & Hansen 1999).

Among the absentees in 2011 were several annual weeds (shepherd's purse, groundsel, and common orache) possibly edged out by overgrowth of grasses and thickets of bramble in some areas. Newly arrived weeds included ivy-leaved speedwell, knotgrass, smooth sow-thistle, curled dock, common nettle, great willowherb and bramble. Another new weed, blinks, formed extensive patches on the gravel driveway. The introduced water avens, greater burnet-saxifrage, great mullein, and caper spurge have all died out along with the single bittersweet. The arrival of the two-spined *acaena* is of interest (Fig.4). Although this alien species is still rare as a naturalised plant in Glasgow it may be spreading.

In the grassy areas greater plantain seems to have disappeared while a few ribwort plantain have arrived. The alien fox-and-cubs ("orange hawkweed") has invaded the front lawn and, with a low growth habit resistant to mowing, has become exceedingly abundant and a garden variety of lady's mantle has turned up on a grassed over driveway. Several cuckooflower have also appeared in recent years in the grassy areas although these are more susceptible to mowing and flowering stalks persist only on untrimmed grassy borders.

The continued growth of mature (and maturing) trees has encouraged the development of a woodland flora under their shade. Lesser celandine has expanded from a few patches to broad carpets. The dozen or so native bluebell introduced in the eighties have now formed into two natural "bluebell glades" with over 150 plants. However non-native spanish bluebell has also spread

from neighbouring gardens and it appears that they may already be hybridising with the native bluebell (see Dickson, 1991, Dickson *et al.* 2000). Four new shade-tolerant woodland species have colonised the garden; wood avens and wild strawberry, both of which are already widespread, a patch of enchanter's nightshade, and a single flowering plant of ramsons.

Among the ferns the broad buckler-fern and hard shield-fern have gone but the shade loving hart's-tongue has arrived. The single maidenhair spleenwort on the garden wall has expanded to over 100 plants and a few plants of wall-rue have established on the same wall, spread from a new colony of about 50 plants on an adjacent neighbour's wall.

Gardens are often overlooked when it comes to surveys of natural flora. It is evident from the small number examined in preparation for the Wild Plants of Glasgow (Dickson, 1991) that suburban gardens, especially if a little unkempt, can host a surprising diversity of natural flora. In well cultivated gardens the natural flora will be dominated by plants of arable land (*i.e.* weeds of flower beds) or grazed pasture (*i.e.* weeds of lawns) but where the maintenance is less strict and where trees are allowed to mature then woodland species may become established.

Accidental introduction from horticulture via grass seeding, flower seed packs or potted plants from garden centres may result in the presence of some unexpected native species. At Newark Drive accidental (or intentional) introduction has been the source of several such arrivals. Mud on tyre treads or wheel arches may possibly explain the spread of some driveway weeds such as blinks and knotgrass. Most of the other plant arrivals probably derive from windblown seeds (or spores). This is undoubtedly the case for most weed species, for broad-leaved helleborine orchids, and for fern species. Others such as bramble and wild strawberries may arrive as seeds within bird droppings. Wood avens and enchanter's nightshade with barbed seeds may perhaps arrive attached to bird's feathers or on the fur of foxes or cats. The spread of the alien two-spined *acaena* is likely to be similar.

Colonisation by tree seedlings is mainly by wind blown seeds from near and far. Two goat willow saplings noted in 2011 were growing in the house roof gutter, 8m above ground, on a bed of pigeon droppings! Although only about 30 cm tall they were already reproducing with catkins. Other trees which produce berries (rowan, whitebeam, hawthorn, wild cherry, holly and elder) may be spread via bird droppings. There is evidence in the form of gnawed cherry stones secreted in holes that mice may also help distribute the wild cherry, while grey squirrels (rare in this area in the 1980s but now common) are a possible candidate for distribution of horse chestnuts.

Species		1986 status	2011 status
creeping buttercup	<i>Ranunculus repens</i>	common	common
meadow buttercup	<i>Ranunculus acris</i>	one plant	one plant
lesser celandine	<i>Ranunculus ficaria</i>	several patches	abundant
welsh poppy	<i>Meconopsis cambrica</i>	common	common
wavy bitter cress	<i>Cardamine flexuosa</i>	common	common
cuckooflower	<i>Cardamine pratensis</i>	absent	five plants
shepherd's-purse	<i>Capsella bursa-pastoris</i>	a few on paths	absent
thale cress	<i>Arabidopsis thaliana</i>	common	common
red campion	<i>Silene dioica</i>	common	one plant
common mouse-ear	<i>Cerastium fontanum</i>	one patch on lawn	several on lawn
blinks	<i>Montia fontana</i>	absent	abundant
procumbent pearlwort	<i>Sagina procumbens</i>	common on paths	a few on paths
herb-robert	<i>Geranium robertianum</i>	common	common
shining crane's-bill	<i>Geranium lucidum</i>	common	common
white clover	<i>Trifolium repens</i>	common on lawn	common on lawn
bush vetch	<i>Vicia sepium</i>	one large patch	four patches
lady's mantle	<i>Alchemilla mollis</i>	absent	three plants
two-spined acaena	<i>Acaena ovalifolia</i>	absent	one plant
bramble	<i>Rubus fruticosus s.l.</i>	absent	abundant
barren strawberry	<i>Potentilla sterilis</i>	five plants	common
wild strawberry	<i>Fragaria vesca</i>	absent	common
waters avens	<i>Geum rivale</i>	15 plants	absent
wood avens	<i>Geum urbanum</i>	absent	common
rosebay willowherb	<i>Chamerion angustifolium</i>	several stands	two stands
broad-leaved willowherb	<i>Epilobium montanum</i>	common	common
american willowherb	<i>Epilobium ciliatum</i>	30 plants	one plant
great willowherb	<i>Epilobium hirsutum</i>	absent	two stands
ground-elder	<i>Aegopodium podagraria</i>	abundant	abundant
greater burnet-saxifrage	<i>Pimpinella major</i>	four plants	absent
pignut	<i>Conopodium majus</i>	one on grass	one on grass
enchanter's nightshade	<i>Circaea lutetiana</i>	absent	twenty plants
common ivy	<i>Hedera helix</i>	several on walls	common
cleavers	<i>Galium aparine</i>	common	common
daisy	<i>Bellis perennis</i>	common on lawns	a few on lawns
feverfew	<i>Tanacetum parthenium</i>	common	two plants
groundsel	<i>Senecio vulgaris</i>	common	absent
common ragwort	<i>Senecio jacobaea</i>	several	common
creeping thistle	<i>Cirsium arvense</i>	common	four plants
spear thistle	<i>Cirsium vulgare</i>	common	two plants
cat's-ear	<i>Hypochaeris radicata</i>	several on lawn	common on lawn
common hawkweed	<i>Hieraceum vulgatum</i>	a few on grass	three plants
fox-and-cubs	<i>Pilosella aurantiaca</i>	absent	abundant on lawn
dandelion	<i>Taraxacum sp.</i>	common	common
smooth sow-thistle	<i>Sonchus oleraceus</i>	absent	two plants
nipplewort	<i>Lapsana communis</i>	common	common
field forget-me-not	<i>Myosotis arvensis</i>	common on paths	six plants
large bindweed	<i>Calystegia silvatica</i>	common	common
bittersweet	<i>Solanum dulcamara</i>	one plant	absent
great mullein	<i>Verbascum thapsus</i>	one plant	absent
ivy-leaved toadflax	<i>Cymbalaria muralis</i>	common on walls	common on walls
foxglove	<i>Digitalis purpurea</i>	common	five plants
ivy-leaved speedwell	<i>Veronica hederifolia</i>	absent	three on drive
thyme-leaved speedwell	<i>Veronica serpyllifolia</i>	common on grass	common on grass
germander speedwell	<i>Veronica chamaedrys</i>	a few on grass border	abundant on grass border
selfheal	<i>Prunella vulgaris</i>	one patch	common
greater plantain	<i>Plantago major</i>	a few on grass	absent
ribwort plantain	<i>Plantago lanceolata</i>	absent	three on grass

common orache	<i>Atriplex patula</i>	a few on paths	absent
knotgrass	<i>Polygonum aviculare</i>	absent	ten plants on drive
japanese knotweed	<i>Fallopia japonica</i>	common	common
common sorrel	<i>Rumex acetosa</i>	common on grass	a few on grass
broad-leaved dock	<i>Rumex obtusifolius</i>	common	common
curled dock	<i>Rumex crispus</i>	absent	one plant
eaper spurge	<i>Euphorbia lathyris</i>	one plant	absent
common nettle	<i>Urtica dioica</i>	absent	one small patch
broad-leaved helleborine	<i>Epipactis helleborine</i>	four under trees	nine under trees
ramsons	<i>Allium ursinum</i>	absent	one under trees
bluebell	<i>Hyacinthoides non-scriptus</i>	twelve under trees	common
spanish bluebell	<i>Hyacinthoides hispanica</i>	absent	several clumps
male-fern	<i>Dryopteris filix-mas</i>	several	several
broad buckler-fern	<i>Dryopteris dilatata</i>	three plants	absent
lady-fern	<i>Athyrium filix-femina</i>	several	several
hard shield-fern	<i>Polystichum aculeatum</i>	one on wall	absent
hart's-tongue	<i>Asplenium scolopendrium</i>	absent	several
wall-rue	<i>Asplenium ruta-muraria</i>	absent	five on wall
maidenhair spleenwort	<i>Asplenium trichomanes</i>	one on wall	abundant on wall
field horsetail	<i>Equisetum arvense</i>	common	common

Table 1. Wild (and naturalised) flowers and ferns 1986 and 2011.

It is clear from the relative abundances of the tree seedlings and saplings that, left to itself, this suburban garden would quickly revert to deciduous woodland dominated by sycamore and norway maple, neither of which is native to Scotland (Dickson *et al.* 2000), with an under-storey of shade-tolerant woodland plants.

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Fig.1. Newark Drive – Front garden with border of mature trees.



Fig.2. Newark Drive - Grassed over concrete driveway.



Fig.3. Newark Drive - Rear garden.



Fig.4. Newark Drive - Two-spined acaena.

Species	
red fescue	<i>Festuca rubra</i>
perennial rye-grass	<i>Lolium perenne</i>
crested dog's-tail	<i>Cynosurus cristatus</i>
annual meadow-grass	<i>Poa annua</i>
cock's-foot	<i>Dactylis glomerata</i>
yorkshire-fog	<i>Holcus lanatus</i>
sweet vernal-grass	<i>Anthoxanthum odoratum</i>
reed canary-grass	<i>Phalaris arundinacea</i>
timothy	<i>Phleum pratense</i>
common couch	<i>Elytrigia repens</i>
field wood-rush	<i>Luzula campestris</i>

Table 2. Grass and rush species in the 1980s.

Species		No. of seedlings/saplings
wych elm	<i>Ulmus glabra</i>	1
silver birch	<i>Betula pendula</i>	3
alder	<i>Alnus glutinosa</i>	6
lime	<i>Tilia x europaea</i>	27
goat willow	<i>Salix caprea</i>	3
wild cherry	<i>Prunus avium</i>	10
cherry laurel	<i>Prunus laurocerasus</i>	6
rowan	<i>Sorbus aucuparia</i>	5
common whitebeam	<i>Sorbus aria</i>	1
hawthorn	<i>Crataegus monogyna</i>	3
broom	<i>Cytisus scoparius</i>	1
holly	<i>Ilex aquifolium</i>	4
horse chestnut	<i>Aesculus hippocastanum</i>	10
norway maple	<i>Acer platanoides</i>	100s
sycamore	<i>Acer pseudoplatanus</i>	100s
ash	<i>Fraxinus excelsior</i>	3
elder	<i>Sambucus nigra</i>	2

Table 3. Tree (and shrub) seedlings and saplings in 2011.

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